

IV. *New Coccidæ collected in Algeria by the Rev. Alfred E. Eaton.* By R. NEWSTEAD, F.E.S., Curator of the Grosvenor Museum, Chester.

[Read Nov. 18th, 1896.]

PLATE IV.

TOWARDS the end of December, 1895, and again quite recently, the Rev. A. E. Eaton very kindly placed at my disposal a most interesting lot of Coccidæ which he had collected principally in the neighbourhood of Constantine, Algeria, during 1895-6. It is with great pleasure that I am at last able to give a complete list of all the species he has taken, together with the descriptions of the new species. My only regret is that I have not been able to do so at an earlier date; but my studies of the British Coccidæ prevented my doing so until now. Mr. Eaton also furnished a most valuable list of the food-plants harbouring the Coccidæ, which has been appended to those insects to which the plants refer. He says:—“The localities in which the *Coccids* were collected lie between 1700 ft. (in the lowest sites in the valleys quoted) and 2500 ft. above the sea. These are not the lowest nor the highest attainable parts of the district. Their character has more of the Hautes Plateaux than of the Mediterranean Region about it, and may be considered that of the mountains of the Tell or of the outskirts of the Plateaux. This will explain the absence of such shrubs as *Viburnum tinus*, L., and (practically) *Laurus nobilis*, L., from the list and collections.”\*

*Aspidiotus nerii*, Bonché, ♂ ♀.

This widely distributed and destructive pest was evidently the commonest species met with. It occurred on the following plants:—“*Clematis flammula*, L., Constantine, 4, xii., '95, on M'cid, above the Route de la Corniche, just beyond the last tunnel. *Spartium junceum*, L., Constantine, 24, x., '95, hedge above the railway skirting the *forêt* at the commencement of the road up the Mansourah. *Calycotome spinosa*, Lk., Constantine, 28, x., '95,

\* The Bône records were added subsequently.

on the slopes of the Mansourah. An abundant insect by the descent from the town to the Port d'Aumale, and below the railway between the railway tunnels beside the Route de la Corniche. *Ceratonia siliquosa*, L., 4, xii., '95, on M'cid in the pine wood. Bône, 4, xii., '96, *Mimosa* and *Robinia pseudacacia*, L., Constantine, hedge of a garden in the suburb el-Kantara. *Cratægus azarollus*, L., Constantine, December, on M'cid. *Hedera helix*, L., Constantine, 26, x., '95, in the town garden; it probably occurs at Algiers, since ivy there harbours abundance of a *Coniopteryx*. *Phillyrea media*, L., 18, x., '95, near the Route de la Corniche, on M'cid. *Nerium oleander*, L., Constantine, near the Route de la Corniche, by the stream, about 3 kilomètres from the town; chiefly on small short shoots near the ground in the shade. Bône, 26, xii., '95. *Antirrhinum majus*, L., Constantine, 23, x., '95, on the brow of the point of the spur of M'cid opposite the Kasba. *Stachys circinnata*, L'Héritier, the same as the preceding. *Laurus nobilis*, L., Constantine, on a shrub planted in the public garden, 2, xii., '95."

"*Osyris alba*, L., Constantine, 23, x., '95. *Olea europæa*, L. (as abundant on the fruit as on the leaves). *Smilax aspera*, L., Bône, 9, ii., '96, by the sea-shore. *Chamærops humilis*, L., Bône, 20, xii., '95. Preyed upon by *Chrysopa vulgaris* and *Coccinellidæ*."

*A. napææ*, Comst., ♀.

"On Myrtle. Bône, up the valley beyond the Orphelinat, 27, ii., '96." Chiefly immature ♀, and situate on the uppersides of the leaves along the midrib. Does not appear a common species.

*Diaspis calyptroides*, Costa, ♀.

"On *Opuntia ficus-indica*, Haw. Bône, 20, xii., '95." Judging from the liberal supply of specimens, and the crowded nature of the scales, the species is very abundant where it occurs.

*Mytilaspis pomorum*, Bouché, ♀.

"On *Salix pedicellata*, Desf. (*S. ægyptiaca*, L., ?), Constantine, 26, x., '95, border of the Roumel by the garden of the tile-works near a ford below the Route de

Sétif, about half-an-hour's walk from the town." The scales were unusually grey, and larger than typical examples.

*Mytilaspis minima*, sp. n. (Plate IV., figs. 1-5.)

♀ Scale very convex, filiform, straight or curved, margins irregular, owing to the numerous hairs on the leaf of the food-plant; colour pale yellow-brown or red-brown, anal extremity usually paler. Larval pellicle terminal of the same colour as the scale. Long. .50—1.50 mm.

♀ Adult elongate, attenuated in front; antennæ rudimentary. Pygidium (figs. 1, 2, 3) rounded, lobes short, median pair large and widely separated, with the lateral margins usually emarginate; second and third pairs rudimentary. There are generally three pairs of plates on each side beyond the median lobes, which are very long and broad; and between the median lobes a much shorter pair, widely separated. When present there is a rather long spine near the second, third, and fourth pairs of lobes, but they are often wanting. Five groups of compound spinnerets are present; anterior group with 2-5, anterior laterals 3-6, posterior laterals 3-6.

♂ Scale convex, a little wider than the larval pellicle; white, with the larval pellicles darker.

♂ Second stage elongate-ovate, closely resembling the ♀ in character. Pygidium (fig. 4) with 5 almost continuous groups of compound spinnerets; the anterior with 3, anterior laterals 7-8, posterior laterals 4-6; the median lobes are very broad and deeply emarginate; the second and third pairs are scarcely visible. The plates are somewhat larger and more numerous than in the ♀.

Larva. Antennæ (fig. 5) of 6 joints, of which the third is nearly as long as the rest together; fifth shortest, first much the widest.

*Hab.* "Among the rocks at the brow of the wooded slopes of the Mansourah; on *Ficus carica*, L., 24, x., '95."

The ♀ were scattered over both surfaces of the leaves; but the ♂ were on the upper side along the ribs. This is the smallest species I have yet studied; and in other respects it seems quite distinct. It belongs to that section of which *M. cordylinidis*, Mask., is the type.

*Mytilaspis ampelodesmæ*, sp. n. (Pl. IV., figs. 6, 7.)

Scale of the ♀ long and narrow, sides parallel, white; larval pellicle white or pale yellow, transparent; second pellicle red-brown inclining to piceous in the centre, usually covered with white secretion; ventral scale white or yellowish white, and apparently incomplete. Long. 1-2.25 mm., lat. .50 mm.

♀ Adult very elongate, sometimes attenuated and curved in front. Rostral filaments very short. Rudimentary antennæ with two or three spines. Margin in front with a few spiny hairs. Pygidium (fig. 6) slightly produced; first and second pair of lobes very large, chisel-shaped; third pair nearly obsolete. Plates very long, simple and stout; two between the median lobes and two between the latter and the second pair; beyond these are usually nine others, arranged in threes. Spines long and slender; median pairs considerably within the margin; the rest are arranged as shown in the figure. Ventral compound spinnerets in five groups; anterior group with 1-7, anterior laterals 15, posterior laterals 15-22; in one example the anterior group is entirely wanting.

Scale of the ♂ white, a little convex; larval pellicle yellowish.

♂ Second stage possessing antennæ (fig. 7) of six nearly equal joints.

This character I have not hitherto observed, and it may be exceptional; but as my knowledge of the intermediate stages of the ♂ *Coccidæ* is very limited, I cannot now offer an opinion. It is certain that the preceding species possesses none.

*Hab.* "Constantine, 5, xii., '95, mountain westward of the town across the valley, at an altitude of about 2500 feet; 7, xi., '95, among rocks at the top of the wood on M'cid; 8, xi., '95, among the rocks above the wood on the Mansourah, near the quarries below the barracks."

On *Ampelodesma tenax* [Vahl.], Lk. This species is allied to *Mytilaspis cordylinidis*, Mask., in the form and character of the scale; but the structure of the pygidium is clearly distinct.

*Chionaspis nerii*, Newst., ♀ and ♂ scales.

Although not exclusively confined to *Nerium oleander*, it is evidently partial to that plant. The Rev. A. E. Eaton says that "the mostly solitary ♀ and its ♂ are common on the oleander, on leaves of well-grown stems, and the ♀ makes a light-yellow rounded patch or spot of discoloration in the leaf."

*Hab.* Constantine, near the Route de la Corniche. Also on the same plant at Bône, 26, xii., '95. And at Constantine three ♀ on *Olea europæa*.

*Chionaspis striata*, sp. n. (Pl. IV., fig. 8.)

Scale of the ♀ very convex, generally widely pyriform, transversely striate, the striæ well separated, equidistant, and clearly defined; shining satiny-white; pellicles pale ochreous yellow or

colourless; anal extremity of second pellicle of a more decided yellow than the rest. Long. 75-1.25 mm.

♀ Adult elongate ovate. Rostral filaments short. Pygidium (fig. 8) rather widely rounded and continuous with margin. Ventral compound spinnerets in five groups; anterior group with 3-4, anterior laterals 9-13, posterior laterals 8-17; median lobes short, very widely separated, and between them six very short spines, three on each side of the median line; immediately beyond the lobes are two more spines, which are followed by faint traces of the second and third lobes and one or two plates. Often, however, spines, plates and lobes are entirely absent. Long. 1.25 mm.

♂ Scale white, closely felted, tricarinate; pellicle pale ochreous, or greenish yellow, cephalic extremity darker.

♂ Adult unknown.

*Hab.* On Cypress. "Constantine, on the side of the Mansourah, on young trees planted by the garde forestier's house, and elsewhere in the wood. It occurs also more sparingly in the Mohammedan cemetery . . . where in fact it was first noticed."

The study of this unique species has given me infinite pleasure. The interesting satiny-white striate scales may be recognized at a glance; and the widely separated median lobes are very characteristic.

It is strange, though, that many of the ♀ should be without marginal appendages to the pygidium, and even when these are present they are more or less rudimentary.

*Parlatoria affinis*, sp. n. (Plate IV., figs. 9-12.)

Scale of the ♀ circular, when isolated and upon the smooth surface of the leaf or fruit, but when over-crowded it becomes elongate or widely pyriform; dusky white or pale ochreous; larval pellicle at the margin in front, rarely extending beyond it; second pellicle occupying nearly one-third of the scale; both pellicles variable in colour, usually dark obscure green or piceous, rarely ochreous red; the anal extremity of the second pellicle often dull orange. The scale is unusually thick, and dusted with ochreous or greyish meal. Diam. 1-1.25 mm.

♀ Adult (fig. 9) almost circular. Rudimentary antennæ with a short curved spine (fig. 10). Rostral filaments extending to middle of body. Segmentation distinct. Margins of abdominal segments fringed with serrate and simple plates. Dermis at margins of

free abdominal segments broadly set with numerous large pores or glands. Pygidium (fig. 11) somewhat angular; ventral compound spinnerets usually in five groups; anterior group with 1-3, or entirely absent, anterior laterals 13-20, posterior laterals 14-19; margin crenulated; there are three pairs of well-developed lobes, of which the median pair are much the largest: all deeply emarginate at the outer extremity; fourth pair of lobes almost obsolete. There are two serrate plates between each pair of lobes, beyond them several others, broader and more palmate, with the serrations rather shallow and the tips blunt and rounded. Within the margin on each side are 9-10 large crescent-shaped pores or openings. Long. .25-.75 mm.

Scale of the ♂ straight, without carinæ; pale ochreous or dusky ochreous when upon the undersides of the leaves, white when upon the upper surfaces or in exposed situations; larval pellicle terminal; bright ochreous or dull orange, centre dark obscure green.

♂ Antennæ of 10 joints, thickly set with short hairs; apical joint (fig. 12) very short, suddenly narrowed about the middle and pointed; it is furnished with two long, stout, knobbed hairs: the first projecting at right angles from the centre of the lower half, the other at the extreme tip. The articulation of the tibio-tarsal joint wide; lower pair of tarsal digitules long and slender, and extending to tip of claw; upper pair wanting. I can give no further information as the specimens are too imperfect.

*Hab.* "Constantine, along the Route de Sétif, near the Camp des Oliviers, 6, xi., '95; on *Fraxinus oxyphylla*, Marsh.; also on *Olea europæa*, L., from the same locality; and from the north side of M'cid."

*Parlatoria zizyphi*, Lucas, ♂ ♀. (Plate IV., fig. 13.)

*Hab.* Bône, 2, ii., '96, on Tangerine oranges.

It is necessary here to call attention to some important characters which apparently have been hitherto overlooked. The adult ♀ has a large marginal tubercle (fig. 13) projecting from each side of the thoracic segment, and bearing on the dorsal (?) surface a minute spine. Below the tubercle on the extreme margin a similar isolated spine. *P. pergandii*, Comst., also possesses a similar character, but in this latter there is the merest extension of the body surmounted by a small angular spine.

*Parlatoria pergandii*, Comst.

*Hab.* Bône, 8, ii., '96, on Tangerine orange.

*Planchonia algeriensis*, sp. n. (Plate IV., figs. 14-17.)

Test of the ♀ short ovate, hemispherical; opaque; lemon-yellow. Dorsum almost covered with very short woolly filaments, which gradually lengthen as they near the margin. Marginal fringe long, irregular and without design. Anal orifice almost erect and transversely elongate. When the dorsal filaments are worn away, as is often the case, the test presents a wax-like appearance. The test rests in a shallow depression, and is surrounded by an abnormal swelling of the plant-tissues, as in *P. quercicola*, Bouché, and *P. hederæ*, Licht. Long. 2.50-3.50, lat. 1.75-2.50 mm.

♀ Adult. Shape uncertain. Mentum monomerous, very short; unexpanded filaments scarcely longer than mentum. Dermis (fig. 14) above, with numerous scattered figure-of-eight spinnerets (*a*) and very long, slender, tubular spinnerets (*b*); ventral surface with small simple spinnerets (*c*), which occur chiefly near the margin; at the margin is a double row of figure-of-eight spinnerets.

♀ Second stage. Antennæ (fig. 15) of 6 joints; 1 widest, 2 longest and tapering; 3, 4, 5, and 6 gradually widening towards apex; 2 and 4 with a single hair; 6 with one long and two shorter hairs. Legs (fig. 16) longer than antennæ; tarsi twice the length of the tibiæ, with 3-4 rather long hairs arising from a central constriction; claw twice the length of the digitules. I could trace only a single tarsal digitule, but it is quite possible the others may have been broken away. Dermis with a single marginal and two dorsal rows of figure-of-eight spinnerets of the same character as those in the adult.

Larva. Antennæ (fig. 17) of 6 joints; 1 widest, 2 narrow at base, 3, 4, 5, and 6 equal.

*Hab.* "Constantine, 24, x., '95, hedge above the railway, skirting the *forêt* at the commencement of the road up the Mansourah; on *Spartium junceum*, L."

In many respects this species resembles *P. hederæ*, Licht., but differs in having the test more ovate and not attenuated behind, and in the character of the antennæ of the ♀ 2nd stage. The opacity of the test is also another mark of distinction.

*Planchonia ilicis*, sp. n. (Plate IV., figs. 18, 19.)

Test of adult ♀ glassy, almost circular, convex; constricted at the margin by the first pair of spiracles, but this character is inconstant, and often asymmetrical; anal orifice very large and slightly produced; margin carinate; *without* cilia. To the naked eye the colour is bright, shining, greenish yellow; with the anterior half, or anterior margin, bottle-green, sometimes inclining to brown. Under the microscope the yellow colour is seen to be due partly to the numerous effete larval skins; and the darker colour in front to the shrivelled body of the ♀. The old weathered examples present a greyish appearance. Ventral surface of test with the anterior half dark-brown; posterior half and margin pale greenish yellow; the line of separation between the colours abrupt. Diam. 1.50 mm.

♀ Adult circular. Rudimentary antennæ disc-like and without hairs. Mentum monomerous; unexpanded filaments about same length as mentum. Anal lobes minute, each with a single long hair, and between them two shorter ones. Anal ring small, simple, and apparently without hairs. Dermis (fig. 18) above, with very long tubular and circular spinnerets (*a*): the former most numerous near the margin; there is a complete single row of figure-of-eight spinnerets (*c*) placed close together all round the margin; and near the anal ring a small group of 4 or 5 of the form shown at (*b*).

Test of the ♂ elongate, with a faint median carina, and distinctly segmented. Margin (fig. 19) with a fringe of short glassy filaments arranged in pairs, curved outwards, and meeting together at the tips, somewhat like a pair of callipers. Long. 1 mm.

*Hab.* "Constantine, 23, x., '95, top of extreme corner of the spur of M'cid opposite the Kasba, on the scrub. The same scale occurs plentifully on the Mansourah, near the source of Sidi M'cid. Colour of Coccid, during life, bottle-green below, dusted above with light-yellow. Much infested by a parasitic Hymenopteron."

This is a brilliant species; and in its structural characters difficult to separate from *P. ilicicola*, Targ. Tozz., but the absence of a marginal fringe at once distinguishes it from the latter. There can be no doubt as to the absence of the fringe, as I possess a large number of specimens in the most perfect condition.



*Lichtensia eatoni*, Newstead, ♀.

On *Olea europæa*, and *Phillyrea media*, at Constantine, in Oct., 1895.

*Ceroplastes rusci*, Linn., ♀. (Plate IV., figs. 20-23.)

♀ Adult. Antennæ (fig. 20) of 6 joints, of which the third is much the longest. Anal lobes short, conical; after treatment with potash somewhat triangular and obtusely pointed, each with two gland-pits near the centre towards the apex.

Stigmatic area (fig. 21) with about 12 large, irregular, pocket-like processes (fig. 22), near the margin a group of 3-4 circular spinnerets; and on the margin an irregular row of conical spines (fig. 23). The external characters are not given here, as Signoret (Essai, p. 191) very clearly describes them; but as he gives no structural characters of the adult ♀, the description and figures given above may be of use for future reference.

*Hab.* "Constantine, 18, x., '95, near the source of Sidi M'cid."

*Ceroplastes nerii*, sp. n. (Plate IV., figs. 24, 25.)

♀ Adult. External covering dull white, with a beautiful roseate hue; there are one dorsal and eight marginal plates, all clearly defined and outlined in dark grey, the grey shading off and extending into the plates; nuclei pure white. Anal lobes slightly protruding through the covering. Dermis after treatment with potash non-chitinised, transparent. Antennæ (fig. 24) of 7 joints; 3 longest, 4, 5, & 6 shortest, and equal. Anal lobes with 2-4 long, slender hairs, each arising from a transparent gland towards the apex. Stigmatic area (fig. 25) with 20-25 grouped spinnerets; margin with large, very obtuse, conical spines, arranged two deep at the centre.

Legs normal. Long. 3.5; wide 2.50-3.50; high 1.7-2.25 mm.

*Hab.* "Constantine, 23, x., '95, on *Nerium oleander*. Very local, and found only on young healthy shoots of this year's growth."

This is a large handsome species, and apparently quite distinct. It is like *C. floridensis*, Comst. (Report, 1881, p. 331), in having a non-chitinised skin, but differs in having fewer and shorter stigmatic spines, and marginal hairs; in *C. floridensis* the latter are closer together and much longer.

*Lecanium hesperidum*, Linn., ♀.

*Hab.* Constantine, October and November; on *Ficus carica*; *Convolvulus tricolor*, L.; *Clematis flammula*; *Morus nigra*, L., and on *Mimosæ*. As only a few specimens occurred on the above-named plants, I imagine the species was not very abundant.

*Eriococcus formicicola*, sp. n. (Plate IV., figs. 26, 27.)

♀ Adult elongate ovate, narrowed behind. Antennæ (fig. 26) of 6 joints, 3 longer than 4, 5, and 6 together, has sometimes a central false joint with a very faint articulation. Mentum short, biarticulate. Anal ring with 6 hairs. Anal lobes normal. Legs ordinary; tibiæ and tarsi, exclusive of claw, in length equal; digitules to tarsi and claw simple. Dermis (fig. 27) above, with many short tubular spinnerets; and at wide intervals a minute spine. Margin with a single row of short spines.

Sac of ♀ short ovate, convex, slightly attenuated and recurved behind; anal orifice large: white and closely felted. Long. 3-3.25, lat. .50 mm.

Sac of ♂ elongate ovate, slightly convex. Colour and texture as in the ♀. ♂ unknown.

*Hab.* "Constantine, 24, x., '95, on wooded slope of the Mansourah. Brought up by ants after the first rain, and carried underground again within a few days when the weather became fine. Apparently a very local insect;" on *Cynodon dactylon*, L.

It would seem from the foregoing that prior to the formation of the sac, this species lives underground in company with the ants; but for what purpose the latter bring the Coccids to light, after a heavy rain, is a mystery. It is very singular too that the Coccids should leave their subterranean home and construct their sacs on the leaves and stems of the *Cynodon*, as was certainly the case with those specimens sent to me. It is the first and only species of *Eriococcus* known to frequent ants' nests, and is therefore of great interest.

*Eriococcus thymelææ*, sp. n. (Plate IV., figs. 28, 29.)

Sac of the ♀ short ovate, slightly produced behind, very convex; anal orifice small. Owing to overcrowding of the sacs, they are often irregular in form. Long. 3, wide 2 mm.

♀ Adult elongate ovate, narrowed behind. Anal lobes large,

normal. Antennæ (fig. 28) of 7 nearly equal joints, 3 and 4 the longest; there are a few hairs on the last joint, but none discoverable on the others. Legs long and rather stout. Mentum large, biarticulate, with 8 long hairs near the apex; unexpanded filaments extending to insertion of posterior legs. Anal ring with 6 hairs. Dermis (fig. 29) above almost covered with strong spines: those on the margin much the longest. Scattered amongst the spines are many simple spinnerets. Beneath are numerous minute spines, and a few simple spinnerets. Long. 50-75 mm.

*Hab.* "Constantine, 28, x., '95, on the slopes of the Mansourah near the Dépôt des fourrages of the Chasseurs d'Afrique; on *Thymelæa hirsuta*, Endlicher."

This species may be readily distinguished by the form of the antennæ, and the numerous long irregularly arranged dorsal spines.

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#### EXPLANATION OF PLATE IV.

[See *Explanation facing the PLATE.*]